TITLE

PROCESS FOR THE PREPARATION OF 1,1,1,3,3,3-HEXAFLUOROPROPANE AND AT LEAST ONE OF 1,1,1,2,3,3-HEXAFLUOROPROPANE AND 1,1,1,2,3,3,3-HEPTAFLUOROPROPANE

ABSTRACT OF THE DISCLOSURE

A process is disclosed for the manufacture of 1,1,1,3,3,3-hexafluoropropane (HFC-236fa) and at least one 1,1,1,2,3,3-hexafluoropropane (HFC-236ea) and 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea). The process involves (a) reacting HF, Cl_2, and at least one halopropene of the formula $CX_3CCl=CX_2$ (where each X is independently F or Cl) to produce a product including both $CF_3CCl_2CF_3$ and $CF_3CClFCClF_2$; (b) reacting $CF_3CCl_2CF_3$ and $CF_3CClFCClF_2$ produced in (a) with hydrogen to produce a product comprising $CF_3CH_2CF_3$ and at least one compound selected from the group consisting of CHF_2CHFCF_3, and CF_3CHFCF_3; and (c) recovering from the product produced in (b), $CF_3CH_2CF_3$ and at least one compound selected from the group consisting of CHF_2CHFCF_3 and CF_3CHFCF_3. In (a), the $CF_3CCl_2CF_3$ and $CF_3CClFCClF_2$ are produced in the presence of a chlorofluorination catalyst including a $ZnCr_2O_4$/crystalline α-chromium oxide composition, a $ZnCr_2O_4$/crystalline α-chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/α-chromium oxide composition and/or a zinc halide/α-chromium oxide composition which has been treated with a fluorinating agent.

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